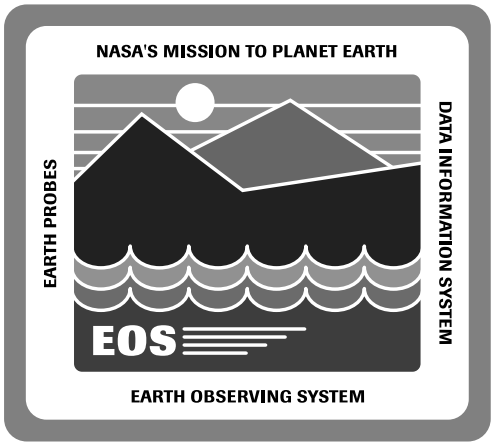


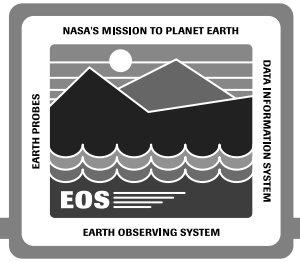
Ir1 Lessons Learned

Chris Smith

csmith@eos.hitc.com

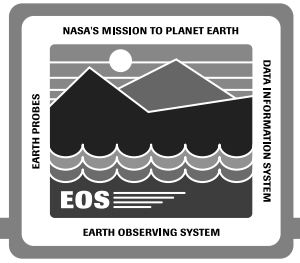
31 January 1996

Lessons-Learned to Date



- ICD Improvements Suggested
- Code Inspections for COTS and GUIs Recommended
- Code Hand-Offs, CM and I&T Problems
- EDF Hardware and COTS S/W CM Needed
- EDF System Administration Services Need Improvements
- SGI Software “Not There Yet”
- Roles and Responsibilities for COTS Integration
- Critical PMS Activities and Roll-Up in ILN
- Training Improvements Suggested

ICD Improvements Suggested

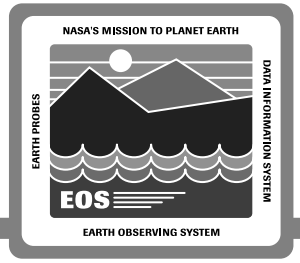


Lesson: Ir1 developers suggested several areas for improvement in ICDs to ECS SMO

- DCE/OODCE servers and gateways not mentioned in ICDs
- ICDs need clear event and data flows for each ECS subsystem vice generic representations
- ICDs need details, e.g.,:
  - When does a session get terminated?
  - Is TSDIS process listening all the time?
    - -- What happens when we don't get a response from TSDIS
    - -- do we log it and retry it, etc.?
  - How are user-ids generated and stored?
  - What does a DDN mean to DSS?
  - What is suggested format for dates/file names etc.?
  - Time out interval ranges should be specified?

Impact: ECS SMO met with developers and modified approaches for future ICDs

Code Inspections for COTS and GUIs Recommended



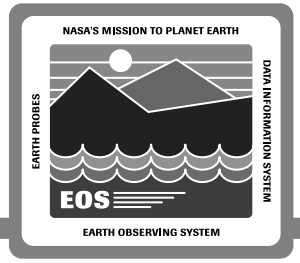
Lesson: Ir1 developers found a need to expand ECS inspections to cover not only custom design and code, but also for COTS and GUI code

- For MSS, a "Configuration Inspection" was suggested
- Gives an opportunity to visit/inspect the screens/topology
- Allows configurable attributes to be assessed before the final code hand-off
- Need to have a similar inspection for any GUI development.

Impact: ECS Quality Office met with Ir1 and Release A developers and modified inspection PIs to cover these areas

(Release A doing these now)

Code Hand-Offs, CM and I&T Problems

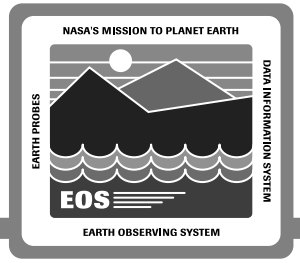


Lesson: Ir1 I&T found the developer-to-CM-to-I&T hand-off process to be in need of some improvements

- **Ensure that developers and managers are aware of and follow development Process Instructions, PIs (e.g., some of these detail what is expected of developers to make their "code hand-offs" to CM).**
- **I&T can not perform testing until the code is in ClearCase--getting it into ClearCase requires a certain directory structure for the source code as well as that the developers deliver their code w/modular "make" files.**
- **Implementing the PI would require additional CM Dept. resources to be expedited**
- **Post-hand-off time should be allocated for 'usability' testing in addition to system I&T (e.g., Ir1 found it useful to run science code through a complete test cycle)**

Impact: ECS Quality Office met with Ir1 and Release A developers and modified Build Process PI to cover several Ir1 concerns -- SMO brought on more CM staff

EDF Hardware and COTS S/W CM Needed

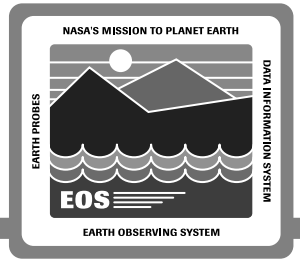


<u>Lesson</u>: Ir1 I&T found a keen need for production/lab environment CM in terms of H/W and COTS S/W

- **There was no formal process, nor an automated tool for this**
- **Ir1 used a cumbersome, manual process that would not work for Release A**
- **ESDIS also expressed concerned about this**

<u>Impact</u>: Release A MSS (CM) Baseline Manager COTS is now being planned for use in the Release A "Mini-DAAC"--A Test Manager tools is also being implemented by Release A I&T

EDF System Administration Services Need Improvements

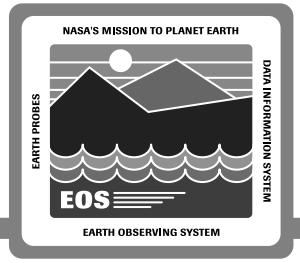


Lesson: Ir1 developers found that workstations need to be periodically cleaned through setting up ECS level CRON files for all EDF workstations

- All /tmp directories should be cleaned every 7th day
- All log files for system processes should be purged regularly
- DCE credential files should be cleaned every 7th day
- User Accounts should be retired/updated and group membership evaluated regularly
- Monitoring functions should be set up for all servers through OpenView

Impact: ECS M&O is implementing these procedures in the EDF and Ir1 operations procedures

SGI Software “Not There Yet”

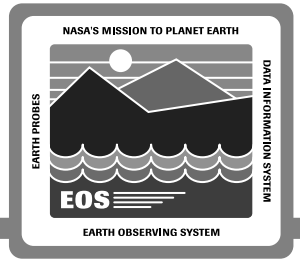


Lesson: ECS developers and I&T found a number of early issues with SGI’s beta software which served to focus COTS integration process

- **“Problems” with operating system configuration, compiler bugs, third party COTS integration and compilers with incomplete implementations (e.g. C++exception handling) initially caused great concern**
- **Working these problems within ECS organizations and with SGI provided much needed early focus on our COTS integration process**
- **Involvement in SGI beta program on Ir1, though unsettling, will enable Release A to deliver a state of the art implementation.**

Impact: Ir1 I&T began effective, bi-weekly NCR meetings to better handle coordination for NCR closure among ECS organizations. Responsibilities for COTS integration were clarified for later releases. ECS had a jump on ITs when SGI environment concerns were surfaced.

Roles and Responsibilities for COTS Integration

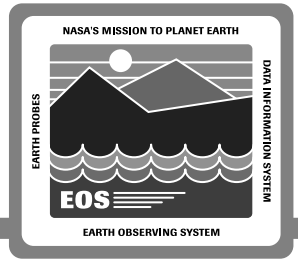


Lesson: Ir1 developers and I&T found that there are many often forgotten but troublesome steps for COTS integration needed to be more fully:

- Defined
- Understood
- Planned
- Clearly assigned to the right organizations

Impact: Ir1 supported refinement in role and responsibility definitions for various internal handoffs from early EDF install through site turnover.

Critical PMS Activities and Roll-Up in ILN

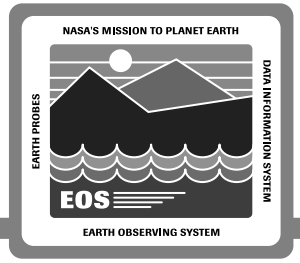


Lesson: Ir1 management found that the ILN has to be maintained quite meticulously

- Any activity that rolls-up to an ILN node may potentially "slip" the node, so ensure all have and retain true "driving" relationships, if not, use another node (e.g., LOE-oriented)
- ILN nodes may be selected by NASA and become "Goldin Metrics" without prior notice (ensure timely and accruate statussing and forecasting)

Impact: Suggested a new PMS rule made that would allow FM's to address the "false link" -- Suggested ESDIS change the metrics selection process

Ir1 Training - Computer/COTS Resources "Fit" for Training



Lesson: Certain COTS (i.e., ClearCase, AutoSys) failed frequently* when all students were simultaneously performing certain activities in Ir1 Training. This lead to some frustration and delay in carrying out training labs.

Impact: Future training activities were provided the following recommendations:

- The system be fully exercised with same number of accounts prior to training
- In some cases, additional copies of software, just for training, should be considered.
- Ensure that sustaining engineering resources are available in the event of potential malfunctions in certain applications/tools.

*Note that training loads on COTS may differ markedly from planned operations loads. For example, in Ir1 training 12 M&O users were all accessing 1 copy of OpenView simultaneously. In Release A, each site would have its own copy.

Ir1 Training - Student Number per Training Session

Lesson: **The number of students attending Ir1 training was increased more than originally planned and beyond training design and logistical constraints. This lead to overcrowding and limited the resource availability.**

Impact: **Future training activities were provided the following recommendations:**

- **Stick to student numbers (class size) for which training program is designed**
- **Don't overcrowd (despite inevitable last minute pressures to do so).**
- **Plan more than one training session for Release A**
- **Recognize the high likelihood of late requests and plan for them.**

Ir1 Training - Ir1 Configuration Stability

Lesson: Ir1 training development and even presentation were based on a somewhat dynamic test (as opposed to operational) configuration of Ir1. This increased the number and frequency of changes to the training program up until the last minute and impacted the training sessions.

Impact: Future training activities were provided the following recommendations:

- Plan training material development so as to recognize dynamic aspects of testing phase and potential immaturity of operational configuration (which may well differ from test configuration)
- Plan training to be done on the system as late as possible--i.e., once all testing is completed and the configuration is as stable as possible

Summary

Ir1 was specifically intended to “go through the process the first time” to better prepare for its much larger and more complex successor releases.

These lessons-learned and those to come are excellent learning experiences and will make Releases A and B go that much more smoothly.